WHAT IS CLAIMED IS:

1. A method of using long range guided wave inspection techniques to detect defects and geometric features in a structure, comprising the steps of:

5   acquiring a first set of reflection signals from a first probe position;

acquiring a second set of reflection signals from a second probe position having a known separation from the first probe position;

10   identifying signals in both sets of data whose amplitude exceeds a threshold value;

time-shifting the identified signals in one set of data by an amount that would cause the signals to occur at the same time if the probes were in the same position;

15   determining a coincidence in time of the identified signals in both data sets; and

interpreting coincident signals as corresponding to defects and geometric features in the structure.

20   2. The method of Claim 1, wherein the data are in the time domain.

3. The method of Claim 2, wherein the data are A-scan data.

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4. The method of Claim 1, wherein the data are in the frequency domain.

5. The method of Claim 4, further comprising the 30 step of converting the data to time domain data before performing the identifying step.

6. The method of Claim 1, wherein the identifying step is performed by defining a gate length, incrementing the data values by the gate length, and within each gate

5 length selecting a maximum signal value.

7. The method of Claim 1, wherein the determining step is performed by defining a time limit within which two signals must occur.

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8. The method of Claim 1, wherein the determining step is performed by comparing occurrence times of peak signal values within each gate.

15 9. The method of Claim 1, wherein the determining step is performed by comparing average occurrence times of values exceeding the threshold within each gate.